



2010 REPORT

Accomplishments & Activities

for Hennepin County



Hennepin County
January 2011

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Hennepin County is a founding member of a coalition of counties across the United States that are taking action to eliminate the causes of global climate change.

Introduction

In 2007, the Hennepin County Board adopted a resolution enabling Hennepin to become a founding member of the Cool County Initiative — a coalition of counties nationwide taking action to eliminate the causes of global climate change.

As part of that initiative, Hennepin is committed to reducing greenhouse gas emissions by 80 percent by 2050, including:

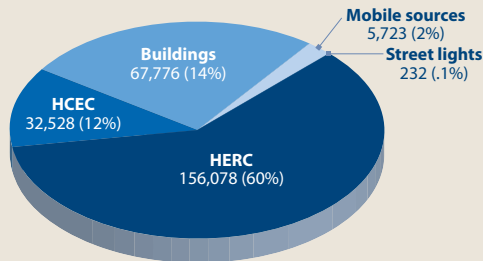
- Developing an inventory of greenhouse gas emissions from county operations.
- Implementing policies to achieve significant and measurable greenhouse gas reduction.
- Establishing quantifiable telecommuting goals.
- Reducing energy consumption through energy efficiency, green building design, more efficient vehicle fleet management and transportation practices, and other targeted greenhouse gas emission reduction programs.
- Coordinating with state and other governmental agencies to reduce emissions.
- Exploring and evaluating the use of renewable energy.

This report highlights major accomplishments over the past year and future activities across multiple county departments that improve energy efficiency or reduce energy use and resulting greenhouse gas emissions.

Cool County planning and implementation

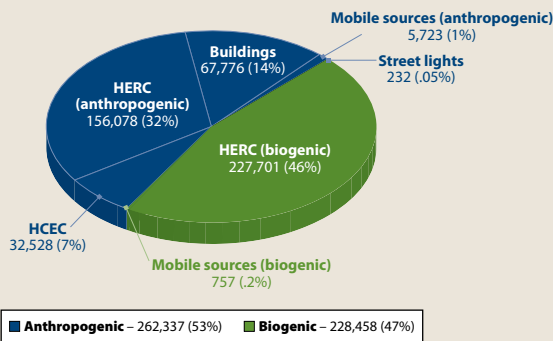
To plan and implement Cool County projects, a steering committee of department directors from Environmental Services, Property Services, Public Affairs, and Public Works Management Support was created to provide a coordinated approach. The steering committee guides a work group of staff from the Central Mobile Equipment Division, Environmental Services, Hennepin County Library, Human Services and Public Health, IT, Public Affairs, and Property Services. The work group plans and implements Cool County activities.

Anthropogenic Carbon Dioxide Emissions from County Operations 2009 (metric tons)



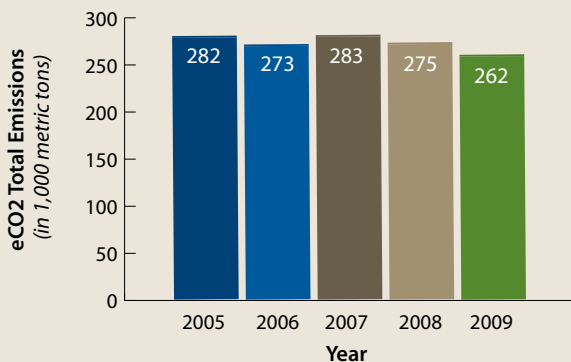
Buildings include carbon dioxide emission from energy used in county-owned buildings, leased buildings and the libraries. Mobile sources are emissions from the county's vehicle fleet.

Anthropogenic and Biogenic Carbon Dioxide Emissions from County Operations 2009 (metric tons)



Anthropogenic emissions are those that result directly or indirectly from the use of fossil fuels to generate energy. These emissions are included in the greenhouse gas inventory. Biogenic emissions result from using materials of recent biological origin, such as biomass or biofuels, to generate energy. Biogenic emissions are not included in the greenhouse gas inventory.

Anthropogenic Carbon Dioxide Emissions from County Operations



Greenhouse gas emissions resulting from county government operations in 2009 are estimated to be 262,337 metric tons carbon dioxide equivalent.

Energy use and greenhouse gas emissions

Energy use from county operations

Energy is used in the county in many ways – to heat and cool buildings and power electronics, equipment and vehicles. In 2009, the county spent nearly \$9.3 million for energy used in county buildings and nearly \$1.4 million in fuel for the county's fleet. The county owns 86 buildings, leases space in 57 buildings and has 676 vehicles in the county fleet.

The county also generates electricity and steam at two facilities – the Hennepin Energy Recovery Center (HERC) and the Hennepin County Energy Center (HCEC).

Plans to reduce emissions focus on two kinds of emissions – direct emissions such as those resulting from fuel combustion, and indirect emissions from the production of electricity used by the county.

Energy in county buildings 2009

Energy type	Use	Cost
Electric (kWh)	63,954,208	\$5,127,141.99
Natural gas (therms)	1,579,568	\$1,226,064.44
Steam (Klb)	78,070	\$1,643,703.00
Chilled water (tons/hr)	2,962,229	\$1,273,327.00
Total		\$9,270,236.43

Includes energy use at the Adult Corrections Facility, County Home School, properties managed by Property Services, transfer stations and radio towers. Does not include HCEC, HCMC, HERC, and traffic signals.

Greenhouse gas inventory

The first step in reducing energy use and greenhouse gas emissions is to learn more about how emissions are produced from county operations. An inventory that tracks greenhouse gas emissions has been developed by Environmental Services, Property Services and the Central Mobile Equipment Division. Starting in 2006, the inventory tracks:

- Annual emissions from energy production at HERC and HCEC.
- Emissions from electricity, natural gas and fuel oil used in county buildings.
- Estimated emissions from energy use at buildings the county leases.
- Emissions from fuel use in county vehicles.

Total emissions in the greenhouse gas inventory include anthropogenic emissions – those produced directly or indirectly from the use of fossil fuels such as coal, oil and natural gas, for energy. These emissions are associated with electricity, heating, vehicle fuel consumption and solid waste combusted for energy.

Biogenic emissions – those resulting from the combustion of biological materials – are not included in the greenhouse gas inventory because the source of this carbon comes from trees and other plant matter rather than fossil fuels. Biogenic materials include paper, wood and other organic materials combusted for energy, and bio-based vehicle fuels such as ethanol and biodiesel.

In the inventory, data for the county's energy facilities, county-owned buildings and fleet is the most accurate. Data from buildings the county leases is based on an estimate of energy use and resulting emissions. Staff is continuing to refine that estimate, which represents about 3 percent of the total greenhouse gas emissions from county operations.

Greenhouse gas emissions

Greenhouse gas emissions resulting from county government operations in 2009 are estimated to be 262,337 metric tons carbon dioxide equivalent (which includes carbon dioxide emissions and the equivalent in carbon dioxide of other greenhouse gases, such as methane). This is a decrease of approximately 5 percent from the 275,040 metric tons of carbon dioxide emitted in 2008. Part of the decrease in 2009 is probably due to the cooler summer that resulted in lower electricity use for air conditioning.



Windows to maximize the use of daylight and green roofs are sustainable building features incorporated into the design of the Maple Grove and Plymouth libraries.

Accomplishments and Activities

Buildings and libraries

Projects to improve energy efficiency and reduce energy use in buildings involve recommissioning studies (studying the operation of a building to identify and implement energy-saving opportunities), lighting retrofits, energy reduction campaigns and incorporating sustainable building features into new or renovated buildings.

Accomplishments

- Improved building operation efficiency by fine-tuning building automation schedules.
- Replaced lighting in several libraries by installing 25-watt linear fluorescent lamps.
- Started the Power Check Energy Meter Program, which allows residents to check out energy meters (which measure energy use of home appliances and electronics) from libraries.
- Encouraged building managers to reduce energy use by awarding Henenergy Awards for significant energy reduction.
- Recommissioning of the Government Center, which began in 2008 and was completed in 2010 — expected to reduce carbon dioxide emissions by 1,800 metric tons annually.

Activities

- Retrofit lighting at more county buildings to provide better and more efficient lighting.
- Install occupancy sensors where applicable; continue to evaluate opportunities to provide better and more efficient lighting.
- Pursue ENERGY STAR rating on qualified buildings.
- Recommissioning 1800 Chicago, Hennepin Library – Eden Prairie, Brookdale Regional Center, Hennepin Library – Franklin, Bloomington Drop-off Facility, Hennepin Library – Linden Hills, Brooklyn Park Drop-off Facility, Hennepin Library – Pierre Bottineau, Hennepin Library – Champlin, Hennepin Library – Sumner, Hennepin Library – East Lake and Hennepin Library – Penn Lake. Recommissioning of Hennepin Library – Minneapolis Central will be complete in 2011.
- Implement energy efficiency measures at HCMC based on recommissioning study completed in 2007 — expected to reduce annual carbon dioxide emissions by 1,800 metric tons.
- Create an employee energy campaign to encourage employees to turn off lights, appliances and electronics; also develop a method to benchmark results.
- Completion of Hennepin Maple Grove and Plymouth libraries, which include sustainable building features such as:
 - Geothermal energy systems and heat recovery wheels
 - Green roofs
 - Permeable pavers, storm water ponds and rain gardens
 - Tall windows to take advantage of natural daylight and roof overhangs to minimize sun's heat in the summer

- High-efficiency lighting with automated controls
- Native building materials

- Renovation of Northeast and Nokomis libraries to improve energy efficiency.
- Reconstruct Brooklyn Park, Excelsior and Walker libraries, which will include increasing their energy efficiency.
- Installed vending misers (which have sensors that power down lights on cold-beverage vending machines and reduce the number of compressor cycles when no one is in the area), thereby reducing their energy consumption.
- Utilize Xcel Energy's Onsite Energy Assessment Program to identify energy conservation opportunities at several county buildings.
- Evaluate bike commuter options at county buildings to promote multi-modal transportation.

Fleet

Projects to reduce fuel use and greenhouse gas emissions from the county fleet include:

- Adding hybrid and flex-fuel vehicles
- Using biodiesel fuel
- Providing information to departments to encourage fuel conservation and ensure replacement vehicles are the right size for the job.

Accomplishments

- Increased the number of E85-capable vehicles in the fleet to 190 by the end of 2009.
- Continued to use biodiesel fuel with 13.5-percent soybean oil for the year.
- Completed diesel emission retrofit on 31 heavy duty trucks.
- Implemented use of nitrogen in tires of county vehicles. Research indicates nitrogen reduces leakage, which in turn reduces tire wear, improves mileage and lowers emissions.

Activities

- Implement a compact vehicle standard for light duty, non-emergency replacements and additions to the fleet.
- Evaluate budget potential to continue with previously identified priorities:
 - Purchase additional hybrid electric vehicles.
 - Purchase additional flexible-fuel vehicles through the normal vehicle replacement process.
 - Investigate idle reduction through the use of small motors or batteries to operate ancillary equipment on utility vehicles (e.g., bucket trucks).



The county is reducing greenhouse gas emissions in the fleet by adding more hybrid vehicles and E85-capable vehicles.

- Continue using a high percentage of vegetable oil in biodiesel, based on performance and price.
- Continue converting Sheriff's Office squad cars to E85 (began in 2008).
- Participate in a local government, public-private consortium exploring grant funding for purchase of plug-in electric vehicles.
- Continue monthly reporting of fuel-use-by-unit to departments to encourage fuel conservation and "right-sizing" of replacement vehicles; provide benchmark MPG information to departments.
- Provide vehicle usage information to departments for needs assessment on low-usage vehicles.

Hennepin Energy Recovery Center (HERC)

Accomplishments

- Commissioned the steam line that connects HERC with the NRG Energy Center's downtown district energy system and Target Field. In 2009, more than 100 million pounds of steam were sent to the downtown system, avoiding greenhouse gas emissions of approximately 5,400 metric tons of carbon dioxide.
- Refurbished the turbine, which increased efficiency by 8 percent and avoided greenhouse gas emissions of approximately 2 metric tons of carbon dioxide for every hour the turbine runs.

Activities

- Implement lighting retrofit. A lighting study identified potential systems to meet lighting needs more effectively, including replacing and relocating fixtures and using daylight in the tipping hall. Improvements will take several years to implement, as some improvements will be timed to coincide with other activities, such as roof replacements. Eventually, the program is anticipated to save 1,000 megawatt-hours annually.
- Conduct a study of potential uses of waste heat from the cooling towers, including radiant heat in any new construction on the HERC site, heating and snow melt at a potential new Met Transit bus garage, and snow melt on a pedestrian plaza. The study will include analysis of additional district heating and cooling opportunities in the Warehouse District.



The steam line connects HERC to the downtown district energy and Target Field.



The solar array in Medina has been generating electricity since April 2009.

Hennepin County Energy Center (HCEC)

Accomplishments

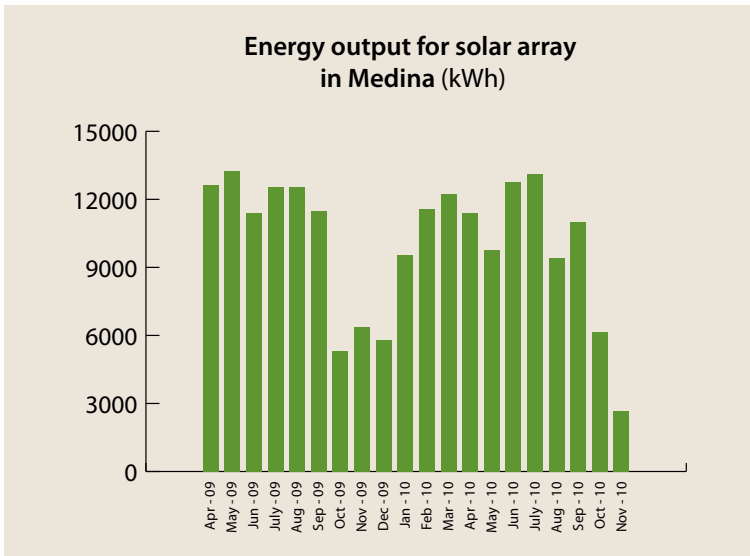
- Contracted with NRG to operate and maintain HCEC.
- Connected the Municipal Building to HCEC heating and cooling network.

Activities

- Explore potential grant opportunities to fund installation of a condensing economizer to recover waste heat.



- Coordinated numerous events that resulted in media coverage of the county's energy-related initiatives, including:
 - Earth Hour, which involved turning off all non-emergency lights at seven county buildings in downtown Minneapolis
 - Solar panel commissioning at the Public Works Facility in Medina
 - Spotlight conversation on climate action at the University of Minnesota
 - Steamline commissioning at HERC
 - Cool County fairs at three libraries
 - Media tour of HERC site improvements
- Received media coverage 19 times on Cool County programs.
- Issued a news release on the benefits of recycling, which resulted in media coverage.



Activities

- Expand web content and maintain Facebook page.
- Promote programmable thermostats and offer reward for recycling old mercury thermostats.
- Continue to incorporate updates in Green Notes.
- Incorporate information about energy conservation and climate change in Community POWER networks projects toolkits, which provide energy-related activity ideas for Early Childhood Family Education programs, congregations, and community and neighborhood groups.

General

Accomplishments

- The Human Services and Public Health Department (HSPHD) obtained a climate change grant from the National Association of County and City Health Officials to conduct a survey of facilities licensed by Environmental Health on a range of topics, including energy use and conservation.
- Obtained a \$2.6-million Energy Efficiency and Conservation Block Grant (EECBG) through the American Reinvestment and Recovery Act.

Activities

- Expand Cool County working group beyond Public Works and Property Services to include libraries, HSPHD and IT.
- Complete and publish HSPHD climate change surveys.
- Implement IT multi-function print device consolidation project to reduce costs, energy use and paper use.
- Convert traffic signals to LEDs using EECBG funds.

Renewable energy

Accomplishments

- Commissioned a 95-kilowatt solar array on the roof of the Public Works Facility in Medina, which has generated more than 190,000 kWh, resulting in more than 390,000 pounds of avoided carbon dioxide emissions since it was installed in 2009.

Outreach and education

Accomplishments

- Expanded web content and launched Facebook page.
- Incorporated regular updates in the Green Notes e-newsletter.